

2011-2012 Influenza Season Week 10 ending March 10, 2012

All data are preliminary and may change as more reports are received.

Synopsis: During week 10 (March 4-10, 2012), influenza activity remained elevated in some areas of the United States, but influenza-like-illness continued to be relatively low nationally.

- **U.S. Virologic Surveillance:** Of the 4,742 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 1,099 (23.2%) were positive for influenza.
- **Pneumonia and Influenza (P&I) Mortality Surveillance:** The proportion of deaths attributed to P&I was below the epidemic threshold.
- **Influenza-associated Pediatric Mortality:** No influenza-associated pediatric deaths were reported.
- **Outpatient Illness Surveillance:** The proportion of outpatient visits for influenza-like illness (ILI) was 2.2%, which is below the national baseline of 2.4%. Regions 5, 7, and 10 reported ILI above region-specific baseline levels. Five states experienced high ILI activity; 1 state experienced moderate ILI activity; 11 states experienced low ILI activity; New York City and 33 states experienced minimal ILI activity, and the District of Columbia had insufficient data to calculate ILI activity.
- **Geographic Spread of Influenza:** Fifteen states reported widespread geographic activity; 22 states reported regional influenza activity; 3 states reported local activity; the District of Columbia, Puerto Rico, and 10 states reported sporadic activity, and Guam and the U.S. Virgin Islands reported no influenza activity.

National and Regional Summary of Select Surveillance Components

| HHS Surveillance Regions* | Data for current week | | | Data cumulative since October 2, 2011 (Week 40) | | | | |
|---------------------------|-----------------------|--|--|---|-----------|-----------------------------|-----|------------------|
| | Out-patient ILI† | % of respiratory specimens positive for flu‡ | Number of jurisdictions reporting regional or widespread activity§ | A (H3) | 2009 H1N1 | A (Subtyping not performed) | B | Pediatric Deaths |
| Nation | Normal | 23.2% | 37 of 54 | 4,139 | 1,253 | 2,369 | 613 | 5 |
| Region 1 | Normal | 9.2% | 2 of 6 | 66 | 30 | 12 | 32 | 0 |
| Region 2 | Normal | 11.9% | 2 of 4 | 62 | 52 | 60 | 40 | 0 |
| Region 3 | Normal | 12.3% | 3 of 6 | 198 | 39 | 46 | 42 | 0 |
| Region 4 | Normal | 16.0% | 5 of 8 | 277 | 86 | 645 | 174 | 1 |
| Region 5 | Elevated | 46.3% | 6 of 6 | 1,177 | 99 | 66 | 78 | 0 |
| Region 6 | Normal | 17.7% | 4 of 5 | 107 | 226 | 404 | 67 | 1 |
| Region 7 | Elevated | 34.0% | 4 of 4 | 623 | 52 | 277 | 14 | 0 |
| Region 8 | Normal | 22.2% | 6 of 6 | 791 | 176 | 685 | 31 | 0 |
| Region 9 | Normal | 29.2% | 3 of 5 | 635 | 413 | 163 | 69 | 3 |
| Region 10 | Elevated | 14.4% | 2 of 4 | 203 | 80 | 11 | 66 | 0 |

*HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, U.S. Virgin Islands; Region 3: DE, DC, MD, PA, VA, WV; Region 4: AL, FL, GA, KY, MS, NC, SC, TN; Region 5: IL, IN, MI, MN, OH, WI; Region 6: AR, LA, NM, OK, TX; Region 7: IA, KS, MO, NE; Region 8: CO, MT, ND, SD, UT, WY; Region 9: AZ, CA, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.

‡ National data are for current week; regional data are for the most recent three weeks.

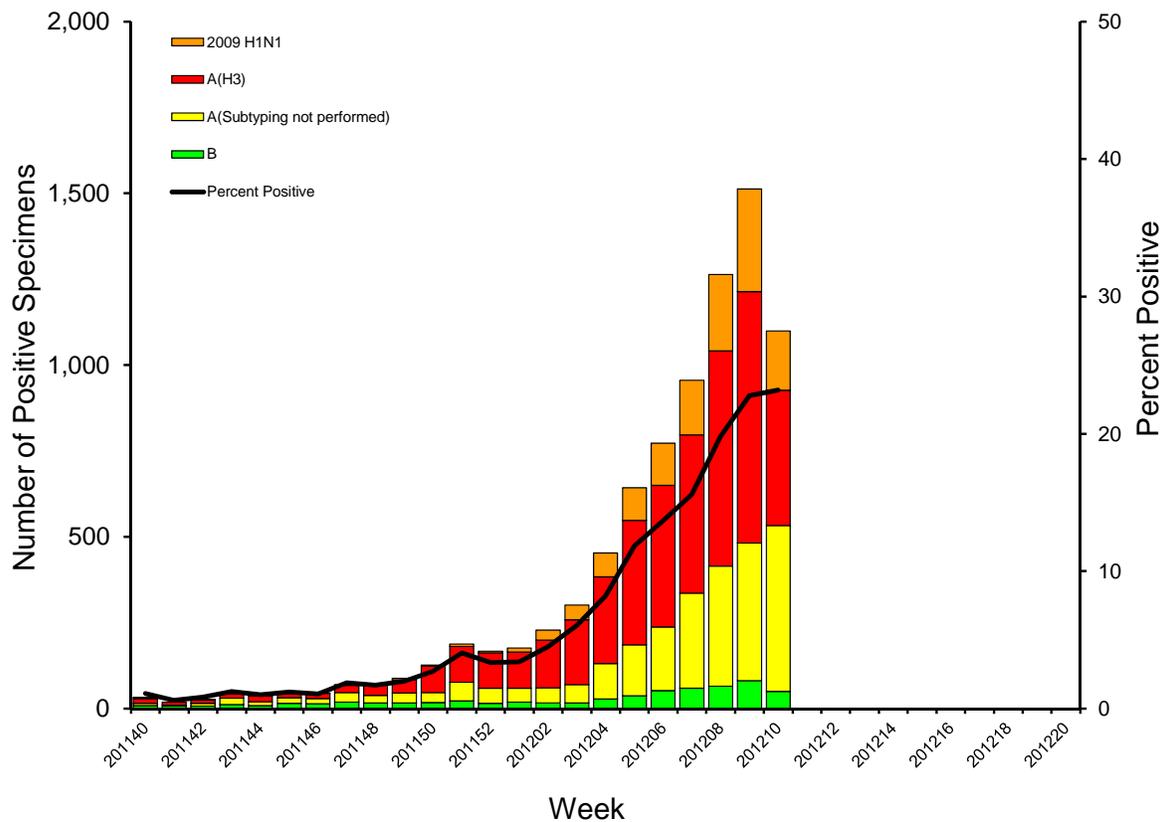
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories located in all 50 states report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza type and subtype. The results of tests performed during the current week are summarized in the table below.

| | |
|---|----------------|
| | Week 10 |
| No. of specimens tested | 4,742 |
| No. of positive specimens (%) | 1,099 (23.2%) |
| Positive specimens by type/subtype | |
| Influenza A | 1,049 (95.5%) |
| 2009 H1N1 | 172 (16.4%) |
| Subtyping not performed | 483 (46.0%) |
| (H3) | 394 (37.6%) |
| Influenza B | 50 (4.5%) |

The timing of influenza activity and what influenza viruses predominate can vary by region and even between states within the same region. Nationally, seasonal influenza A (H3) viruses have predominated since the start of the 2011-2012 season and continue to remain overwhelmingly predominant in Regions 5 and 7, however, the overall proportion of 2009 H1N1 viruses is increasing nationally and in several regions.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2011-2012 Season



Antigenic Characterization: CDC has antigenically characterized 626 influenza viruses [127 2009 H1N1 viruses, 410 influenza A (H3N2) viruses, and 89 influenza B viruses] collected by U.S. laboratories since October 1, 2011.

2009 H1N1 [127]

- One hundred twenty-five (98.4%) of the 127 viruses were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- Two viruses (1.6%) tested showed reduced titers with antiserum produced against A/California/7/2009.

Influenza A (H3N2) [410]

- Three hundred nineteen (77.8%) of the 410 viruses were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- Ninety-one viruses (22.2%) tested showed reduced titers with antiserum produced against A/Perth/16/2009.

Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [89]:

- **Victoria Lineage [40]:** Forty (44.9%) of the 89 influenza B viruses tested belong to the B/Victoria lineage of viruses and were characterized as B/Brisbane/60/2008-like, the influenza B component of the 2011-2012 Northern Hemisphere influenza vaccine.
- **Yamagata Lineage [49]:** Forty-nine (55.1%) of the 89 influenza B viruses tested belong to the B/Yamagata lineage of viruses.

Only a small number of influenza B viruses from the United States have been available for testing so far this season. While less than 50% of these viruses are similar to the influenza B component in the 2011-2012 influenza vaccine, the majority of influenza B viruses circulating worldwide have been similar to the influenza vaccine strain.

Composition of the 2012-2013 Influenza Vaccine: The World Health Organization (WHO) has recommended vaccine viruses for the 2012-2013 Northern Hemisphere trivalent influenza vaccine, and FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) has made recommendations for the composition of the 2012-2013 U.S. influenza vaccine. Both agencies recommend that the vaccine contain A/California/7/2009-like (2009 H1N1), A/Victoria/361/2011-like (H3N2), and B/Wisconsin/1/2010-like (B/Yamagata lineage) viruses. This recommendation changes the influenza A (H3N2) and influenza B virus components of the 2011-2012 Northern Hemisphere vaccine formulation. This recommendation was based on surveillance data related to epidemiology and antigenic characteristics, serological responses to 2011-2012 trivalent seasonal vaccines, and the availability of candidate strains and reagents.

Antiviral Resistance: Testing of 2009 H1N1, influenza A (H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 H1N1 clinical samples are tested for a single mutation in the neuraminidase of the virus known to confer oseltamivir resistance (H275Y). The data summarized below combine the results of both testing methods. These samples are routinely obtained for surveillance purposes rather than for diagnostic testing of patients suspected to be infected with an antiviral resistant virus.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 H1N1 and A (H3N2) viruses (the adamantanes are not effective against influenza B viruses). As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented in the table below.

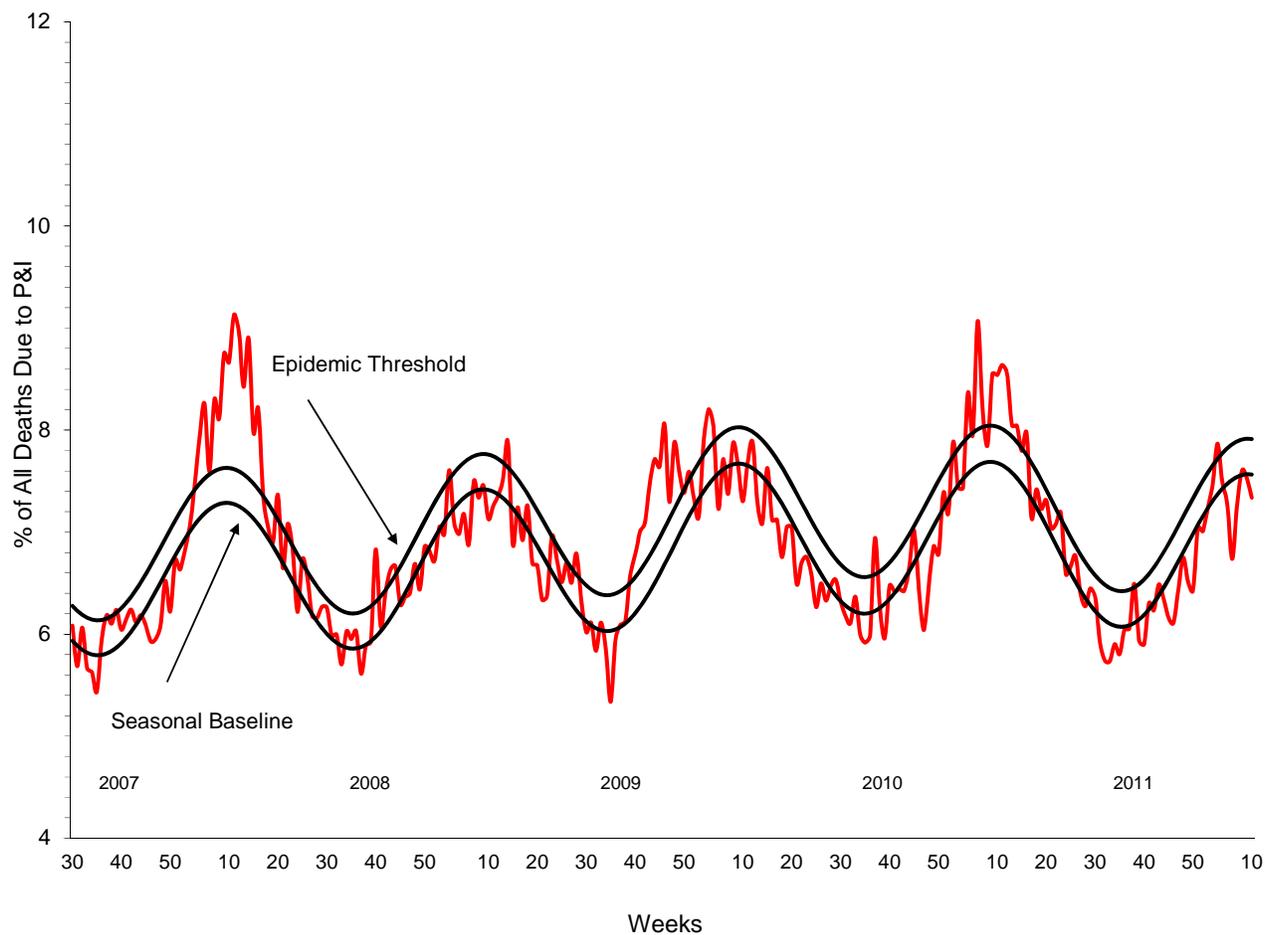
**Neuraminidase Inhibitor Resistance Testing Results
on Samples Collected Since October 1, 2011.**

| | Oseltamivir | | Zanamivir | |
|---------------------------|--------------------------|-------------------------------|--------------------------|-------------------------------|
| | Virus Samples Tested (n) | Resistant Viruses, Number (%) | Virus Samples tested (n) | Resistant Viruses, Number (%) |
| Influenza A (H3N2) | 502 | 0 (0.0) | 502 | 0 (0.0) |
| Influenza B | 99 | 0 (0.0) | 99 | 0 (0.0) |
| 2009 H1N1 | 213 | 1 (0.5) | 148 | 0 (0.0) |

Rare sporadic cases of oseltamivir resistant 2009 H1N1 and influenza A (H3N2) viruses have been detected worldwide. Antiviral treatment with oseltamivir or zanamivir is recommended as early as possible for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at greater risk for influenza-related complications. Additional information on recommendations for treatment and chemoprophylaxis of influenza virus infection with antiviral agents is available at <http://www.cdc.gov/flu/antivirals/index.htm>.

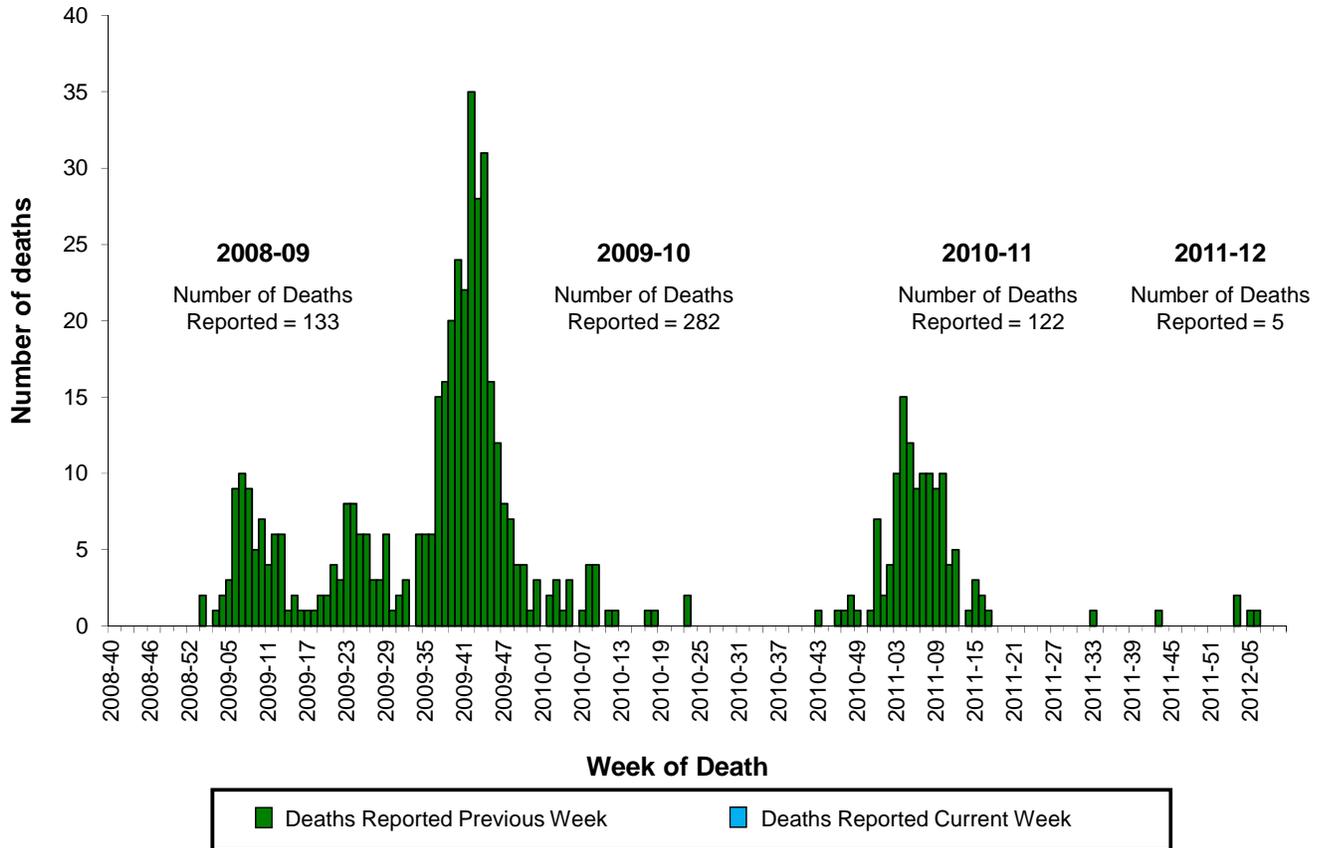
Pneumonia and Influenza (P&I) Mortality Surveillance: During week 10, 7.3% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.9% for week 10.

Pneumonia and Influenza Mortality for 122 U.S. Cities Week ending 3/10/2012



Influenza-Associated Pediatric Mortality: No influenza-associated pediatric deaths were reported to CDC during week 10. Five influenza-associated pediatric deaths have been reported during the 2011-2012 season.

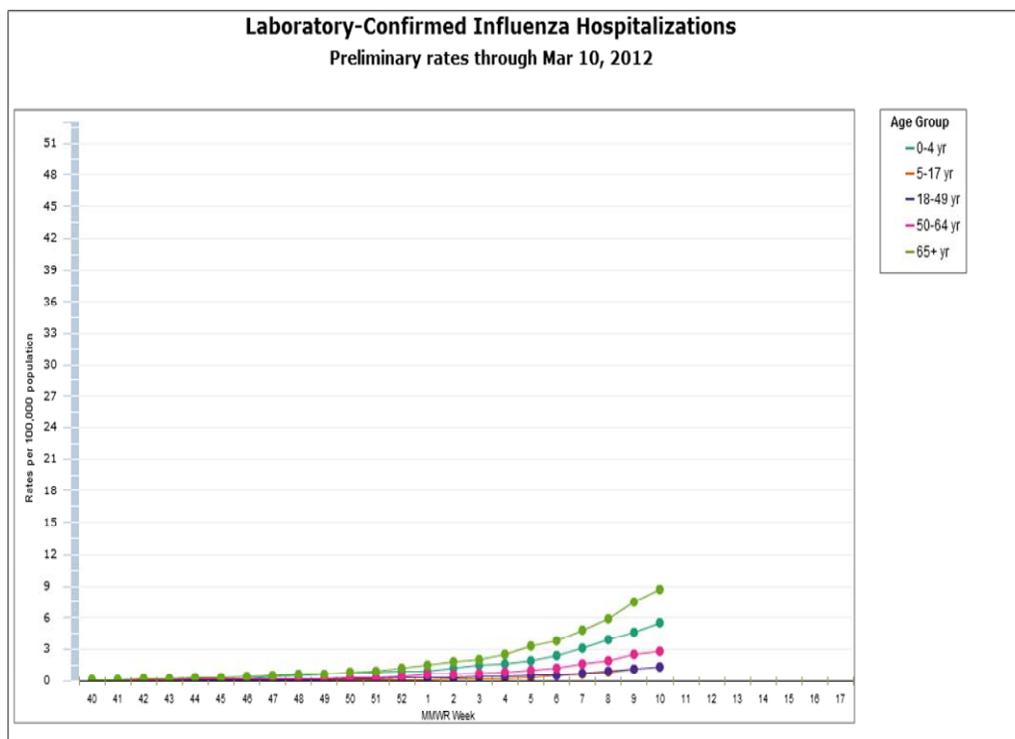
Number of Influenza-Associated Pediatric Deaths by Week of Death:
2008-09 season to present



Influenza-Associated Hospitalizations: The Influenza Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since the 2005-2006 influenza season).

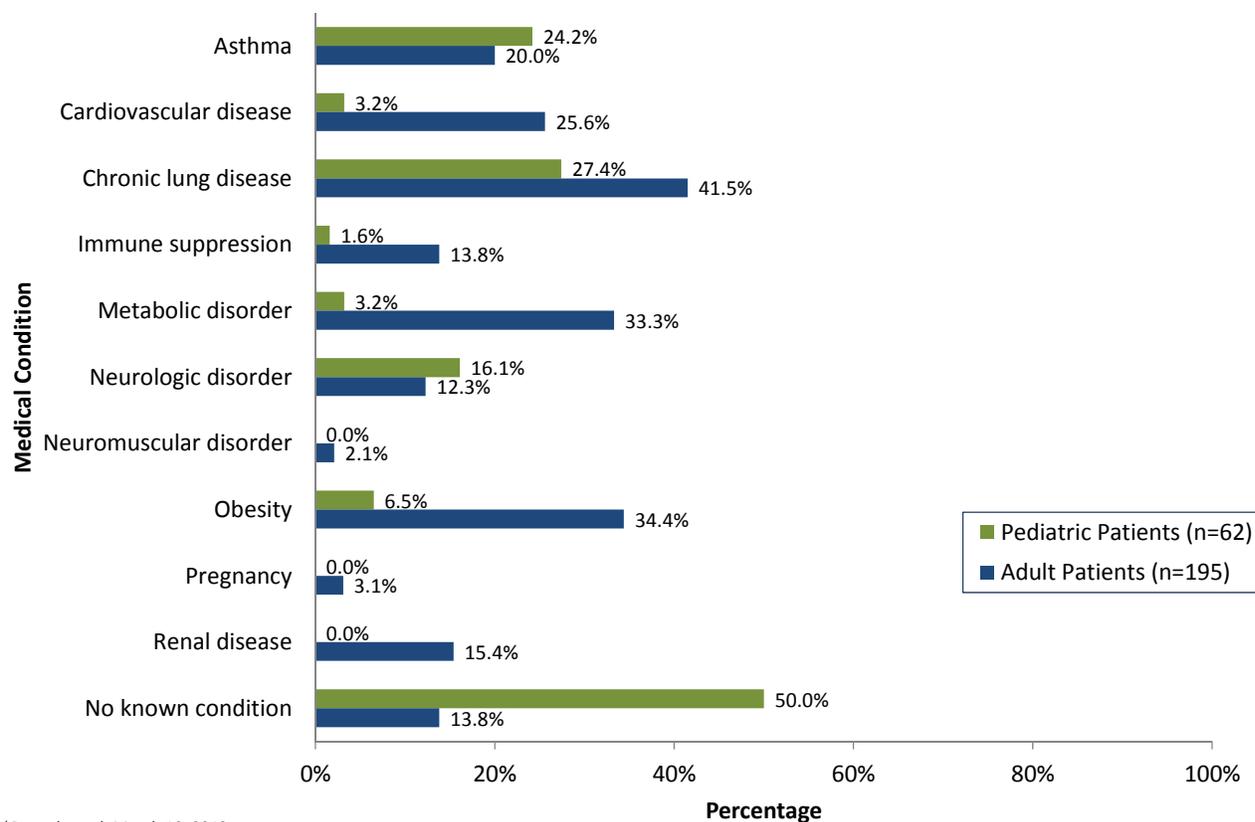
The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 pandemic. IHSP sites included IA, ID, MI, OK and SD during the 2009-2010 season; ID, MI, OH, OK, RI, and UT during the 2010-2011 season; and MI, OH, RI, and UT during the 2011-2012 season. The rates provided are likely to be a vast underestimate of the actual number of influenza-related hospitalizations. First, the FluSurv-NET is not nationally representative, and second, influenza-related hospitalizations can be missed, either because testing is not performed, or because cases may be attributed to other causes of pneumonia or other common influenza-related complications.

Between October 1, 2011 and March 10, 2012, 737 laboratory-confirmed influenza-associated hospitalizations were reported at a rate of 2.7 per 100,000 population, an increase of 24% from last week. Among cases, 652 (88.5%) were influenza A, 72 (9.8%) were influenza B, and 1 (0.1%) was an influenza A and B co-infection; 12 (1.6%) had no virus type information. Among those with influenza A subtype information, 214 were H3N2 and 80 were 2009 H1N1. The most commonly reported underlying medical conditions among adults were chronic lung diseases, obesity and metabolic disorders. The most commonly reported underlying medical conditions in children were chronic lung diseases, asthma and neurologic disorders. However, half of hospitalized children had no identified underlying medical conditions.



Data from the Influenza Surveillance Network (FluSurv-NET), a population-based surveillance for influenza related hospitalizations in children and adults in 14 US states. Incidence rates are calculated using the National Center for Health Statistics' (NCHS) population estimates for the counties included in the surveillance catchment area.

Selected underlying medical conditions¹ among laboratory-confirmed influenza-associated hospitalizations, FluSurv-NET, 2011-2012²

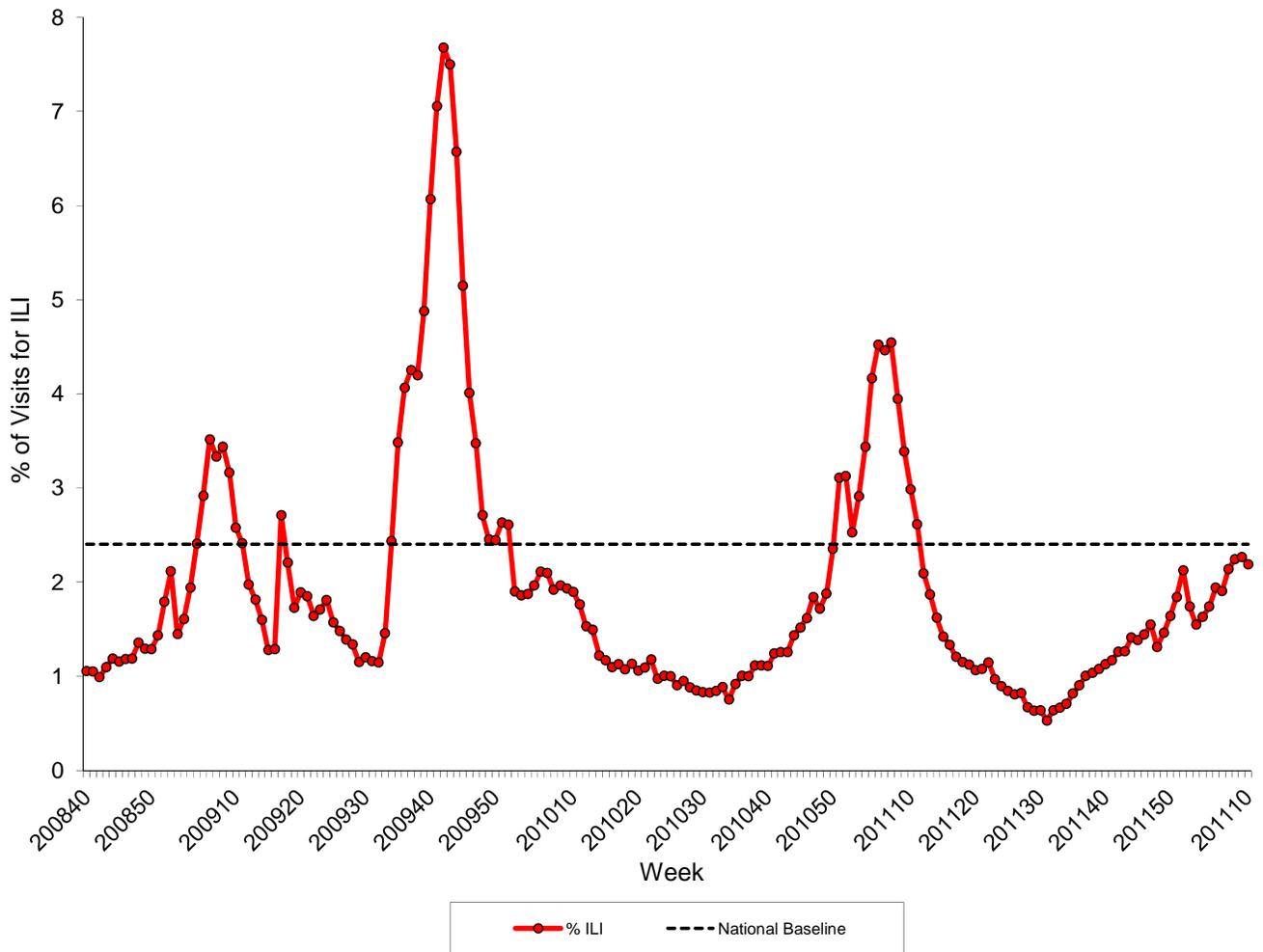


¹Asthma includes a diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression include conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases include conditions such as seizure disorders, cerebral palsy, and cognitive dysfunction; Neuromuscular diseases include conditions such as multiple sclerosis and muscular dystrophy; Obesity was assigned if indicated in patient's medical chart or if body mass index (BMI) >30 kg/m²; Renal diseases include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

²Only includes cases for which data collection has been completed through the medical chart review stage.

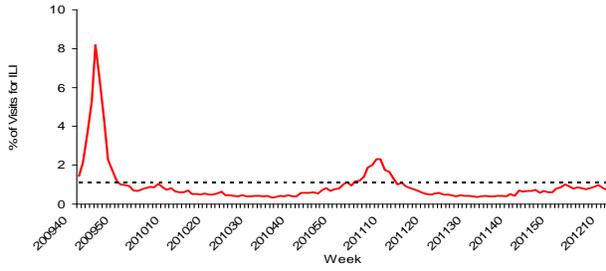
Outpatient Illness Surveillance: Nationwide during week 10, 2.2% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.4%. (ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.)

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, September 30, 2008 – March 10, 2012

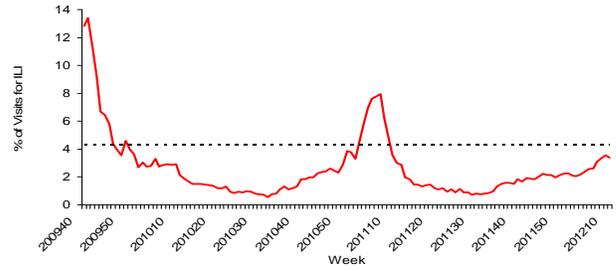


On a regional level, the percentage of outpatient visits for ILI ranged from 0.7% to 3.5% during week 10. Regions 5, 7, and 10 reported a proportion of outpatient visits for ILI above region-specific baseline levels.

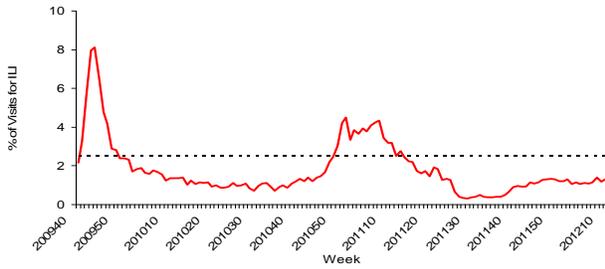
Region 1 - CT, ME, MA, NH, RI, VT



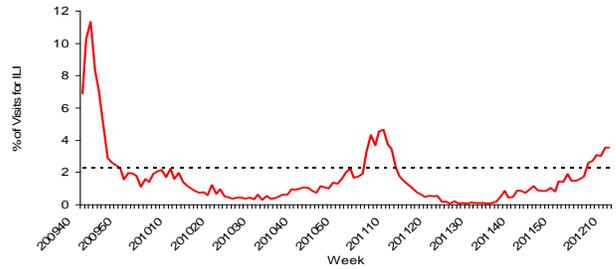
Region 6 - AR, LA, NM, OK, TX



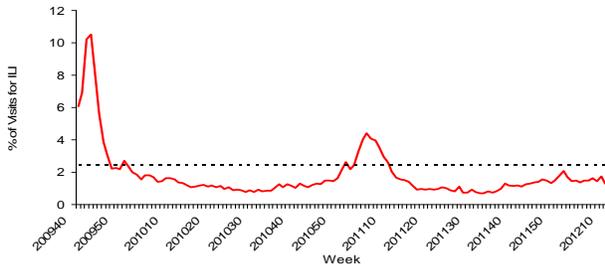
Region 2 - NJ, NY, USVI



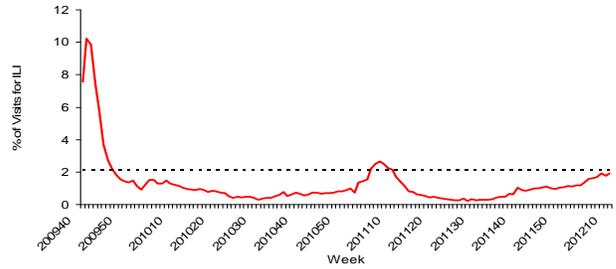
Region 7 - IA, KS, MO, NE



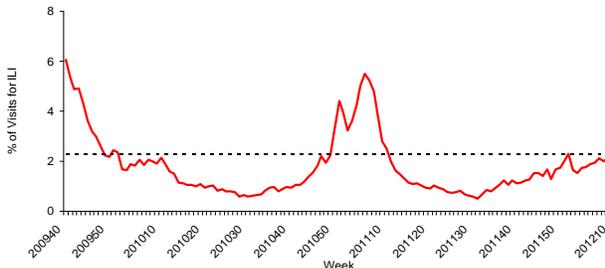
Region 3 - DE, DC, MD, PA, VA, WV



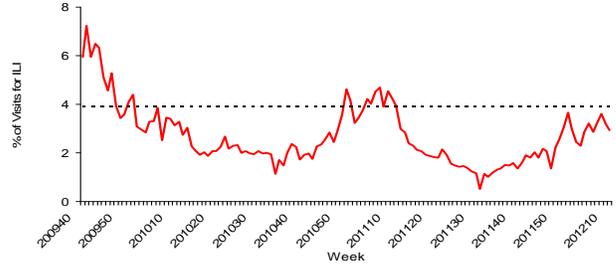
Region 8 - CO, MT, ND, SD, UT, WY



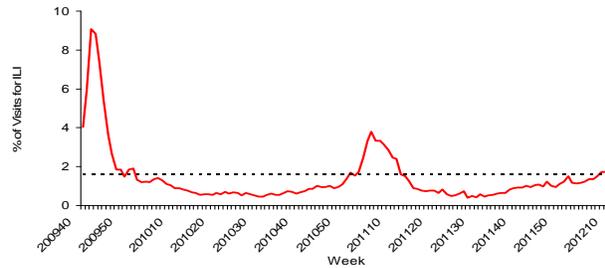
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



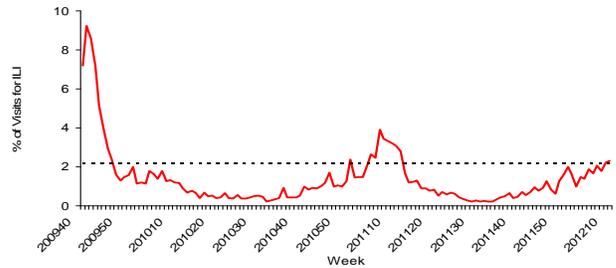
Region 9 - AZ, CA, HI, NV



Region 5 - IL, IN, MI, MN, OH, WI



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

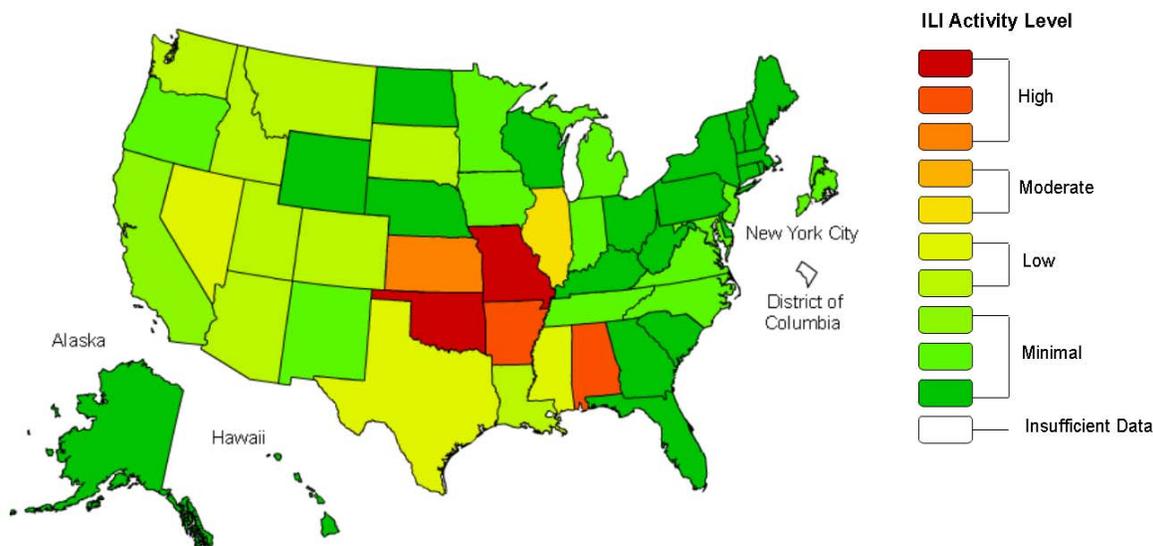
*Use of the regional baselines for state data is not appropriate.

ILINet State Activity Indicator Map: Data collected in ILINet are used to produce a measure of ILI activity* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which corresponds to ILI activity being below average, to intense, which corresponds to ILI activity being much higher than average. Because the clinical definition of ILI is very general, not all ILI is caused by influenza; however, when combined with laboratory data, the information on ILI activity provides a clearer picture of influenza activity in the United States.

During week 10, the following ILI activity levels were experienced:

- Five states experienced high ILI activity (Alabama, Arkansas, Kansas, Missouri, and Oklahoma).
- One state experienced moderate ILI activity (Illinois).
- Eleven states experienced low ILI activity (Arizona, Colorado, Idaho, Louisiana, Mississippi, Montana, Nevada, South Dakota, Texas, Utah, and Washington).
- New York City and 33 states experienced minimal ILI activity (Alaska, California, Connecticut Delaware, Florida, Georgia, Hawaii, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming).
- Data were insufficient to calculate an ILI activity level from the District of Columbia.

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2011-12 Influenza Season Week 10 ending Mar 10, 2012**



*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.

Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.

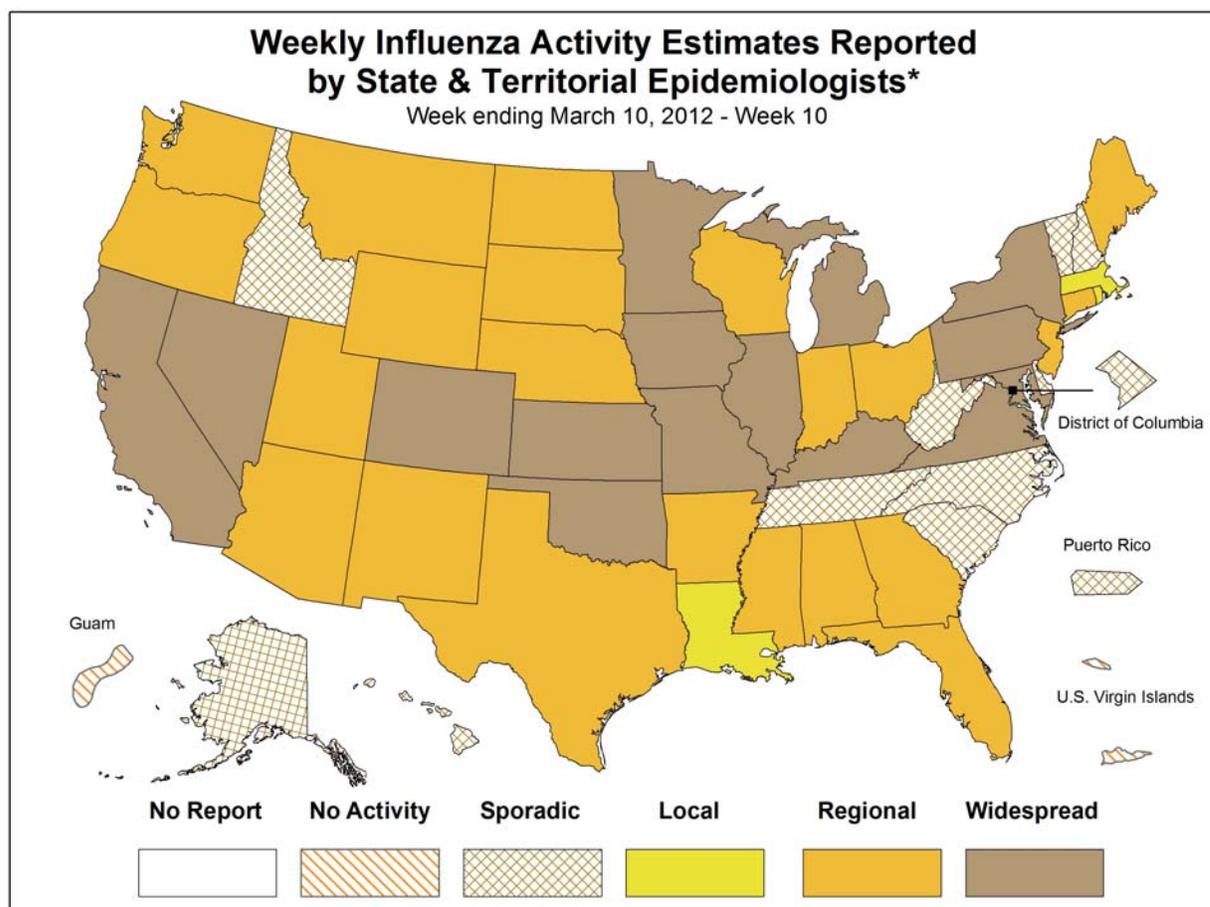
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map is based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

Differences in the data presented here by CDC and independently by some state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists: The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza viruses, but does not measure the intensity of influenza activity.

During week 10, the following influenza activity was reported:

- Widespread influenza activity was reported by 15 states (California, Colorado, Illinois, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Nevada, New York, Oklahoma, Pennsylvania, and Virginia).
- Regional influenza activity was reported by 22 states (Alabama, Arizona, Arkansas, Connecticut, Florida, Georgia, Indiana, Maine, Mississippi, Montana, Nebraska, New Jersey, New Mexico, North Dakota, Ohio, Oregon, South Dakota, Texas, Utah, Washington, Wisconsin, and Wyoming).
- Local influenza activity was reported by three states (Louisiana, Massachusetts, and Rhode Island).
- Sporadic influenza activity was reported by the District of Columbia, Puerto Rico, and 10 states (Alaska, Delaware, Hawaii, Idaho, New Hampshire, North Carolina, South Carolina, Tennessee, Vermont, and West Virginia).
- No influenza activity was reported by Guam and the U.S. Virgin Islands.



* This map indicates geographic spread & does not measure the severity of influenza activity

A description of surveillance methods is available at: <http://www.cdc.gov/flu/weekly/overview.htm>
Report prepared: March 16, 2012.

Additional National and International Influenza Surveillance Information

Distribute Project: Additional information on the Distribute syndromic surveillance project, developed and piloted by the International Society for Disease Surveillance (ISDS), now working in collaboration with CDC to enhance and support Emergency Department (ED) surveillance, is available at <http://isdistribute.org/>.

Google Flu Trends: Google Flu Trends uses aggregated Google search data in a model created in collaboration with CDC to estimate influenza activity in the United States. For more information and activity estimates from the U.S. and worldwide, see <http://www.google.org/flutrends/>.

Europe: For the most recent influenza surveillance information from Europe, please see WHO/Europe at <http://www.euroflu.org/index.php> and visit the European Centre for Disease Prevention and Control at http://ecdc.europa.eu/en/publications/surveillance_reports/influenza/Pages/weekly_influenza_surveillance_overview.aspx.

Public Health Agency of Canada: The most up to date influenza information from Canada is available at <http://www.phac-aspc.gc.ca/fluwatch/>.

World Health Organization FluNet: Additional influenza surveillance information from participating WHO member nations is available through [FluNet](#) and the [Global Epidemiology Reports](#).